ABSTRACT OF THE DISCLOSURE

A method and apparatus for reducing three-dimensional shape data, includes calculating estimation values for portions to be deformed by converging two or more vertices of a polygon model, and reducing the number of data for the polygon model by converging two or more vertices of the polygon model when the estimation values are equal to or below the predetermined permissible value. Estimation values for surfaces to be deformed by shrinking edges or surfaces are calculated based on distances between the respective surfaces and all the original vertices involved in the surface deformation. Before each data reduction, the portion having been involved in all the previous data reductions is defined as a reduction prohibition area, and a succeeding data reduction is applied to a portion other than the reduction prohibition area.